



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/EP00/01850 <b>(22) International Filing Date:</b> 3 March 2000 (03.03.00) <b>(30) Priority Data:</b> 199 09 637.6      5 March 1999 (05.03.99)      DE <b>(71) Applicant (for all designated States except US):</b> GREENOVATION PFLANZENBIOTECHNOLOGIE GMBH [DE/DE]; Sonnenstrasse 5, D-79104 Freiburg im Breisgau (DE). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> BEYER, Peter [DE/DE]; In der Eitzmatt 10, D-79423 Heitersheim (DE). POTRYKUS, Ingo [DE/CH]; Im Stigler 54, CH-4312 Magden (CH). <b>(74) Agent:</b> JOACHIM STÜRKEN PATENTANWALTSGESELLSCHAFT MBH; Engesserstrasse 4b, D-79108 Freiburg im Breisgau (DE).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
<b>(54) Title:</b> METHOD FOR IMPROVING THE AGRONOMIC AND NUTRITIONAL VALUE OF PLANTS		
<div data-bbox="453 1161 1032 1646" data-label="Diagram"> <pre> graph TD     IPP[IPP/DMAPP] --&gt; GGPP[GGPP]     GGPP --&gt; Tocopherols     GGPP --&gt; Gibberellins     GGPP --&gt; Chlorophylls     GGPP --&gt; Plastoquinone     GGPP --&gt; Phylloquinone     GGPP --&gt; Phytoene     Phytoene --&gt; Carotenoids       </pre> </div>		
<b>(57) Abstract</b> <p>The present invention provides means and methods of transforming plant cells, seeds, tissues or whole plants in order to yield transformants capable of expressing all enzymes of the carotenoid biosynthesis pathway that are essential for the targeted host plant to accumulate carotenes and/or xanthophylls of interest. The present invention also provides DNA molecules designed to be suitable for carrying out the method of the invention, and plasmids or vector systems comprising said molecules. Furthermore, the present invention provides transgenic plant cells, seeds, tissues and whole plants that display an improved nutritional quality and contain such DNA molecules and/or that have been generated by use of the methods of the present invention.</p>		